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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/190,208	11/13/1998	JIASHU CHEN	CHEN3-1	6397

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EXAMINER
LAO, LUN S

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 02/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/190,208	CHEN ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Introduction

1. Claims 1-14 remain pending. This action is in response to the amendment filed 12/19/2002. Applicant has amended claims 1, 7 and 11.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata (US PAT. 5,974,154) in view of Matsumoto (US PAT. 5,381,482).

Regarding claim 1, Nagata teaches a digital delay line for use in a 3D audio sound system, comprising:

a first delay module (see fig.2, 61) providing a choice (see fig.10) of delay within a first resolution for use (in any event, " for use" is not a positive structural limitation) in said 3D audio sounds system; and

a second delay module (see fig.2, 71) in series with said first delay module, said second delay module providing a choice (see fig.2, 41, 48, 49) of a plurality of additional delays. (Col. 4, line 42 – col. 5, line 44).

Wherein said first resolution is added (72L, 72R) to said additional fractional delays (output of delay unit 61 is input to delay unit 71 to pick up additional delay, col. 5, lines 11-23) for use in said 3D audio sound system to create a perceived positional sound (sound field produced by the combination of FL, FR, RL and RR signals, col. 8, lines 25-57).

While Nagata teaches that the additional delay produced by the second delay module can be set to provide a range of delays by adjusting the state of switch matrix 45, the dials 41,48 and 49 and the command switch 50 (see col.5 line 22 - col.6 line 6), Nagata does not explicitly teach that the additional delays produced include one which is a fraction of / less than the first resolution/delay.

Matsumoto teaches a digital delay line for use in a 3D audio sound system (fig. 4), wherein a second delay module (#32, 33) produces an additional delay (0.7ms) which is a fraction of / less than a first delay (20ms) produced by a first delay module (#40) in series. See col. 9, line 15 – col. 10, line 55. Given the teaching of Matsumoto, it would have been obvious to set the additional delay produced by the second delay module in Nagata to a value which is a fraction of / less than the first resolution/delay. In so doing, the sound would have appeared more naturally (Matsumoto, col. 1, lines 45-52).

Regarding claims 2, 3, Nagata discloses that the digital delay line for use in a 3D audio sound system includes first delay module a first-in, first out buffer (see fig.2, TD1-TDn)); and has a choice of any one of a plurality of polyphase filters (see fig.8, 921), each of said polyphase filters providing an additional fraction delay less than said first

resolution (It has a chance by adjusting the state of switch matrix 45,the dials 41,48 and 49 and the command switch 50 and see col.4 line 60-col.5 line 67).

Regarding claims 4, 5, Nagata teaches that the digital delay line for use in a 3D audio sound system includes a localization control module comprising an interaural time delay look-up table associating desired sound source locations with a particular interaural time delay (see col.6 lines 7-42); and integer (see fig.2, 61) and fractional (see fig.2, 71) delay selector adapted to determine a first time delay for use by said first delay module and said additional fractional delay for use by said second delay module (see col.4 line 60-col.5 line67).

Regarding claim 6, Nagata teaches that the digital delay line for use in a 3D audio sound system includes first resolution is based on a sampling rate of a digital audio signal (see fig.2, (TD1, TD2....TDn)).

Regarding claim 11, Nagata teaches that apparatus for providing an interaural time delay in a digital 3D sound system, comprising:

means for selecting one of a plurality of available first time delays (see fig.2, 61)) having a first resolution between each of said plurality of available first time delays;

means for additionally selecting one of a plurality of available second time delays (see fig.2, 71), and

means for adding (see fig.2, (72L, 72R)) said selected first time delay and said second time delay to provide a desired interaural time delay for use (in any event, " for use" is not a positive structural limitation) in said 3D audio sounds system to create a

perceived positional sound (sound field produced by the combination of FL, FR, RL and RR signals, col. 8, lines 25-57).

As to each of the plurality of available second time delays being less than the first resolution, this is met by the combination of Nagata and Matsumoto. Note the rejection of claim 1 for a detailed discussion. Note the rejection of claim 1 for a motivation to combine.

Regarding claims 12, 13, Nagata teaches that the apparatus for providing an interaural time delay in a digital 3D sound system of desired interaural time delay relates to a desired interaural time delay (see fig.2, (61,71)) for one ear of a listener (see fig.2, (72Lor 72R)); and said first time delay (see fig.2, 61) relates to a desired interaural time delay for a second ear of said listener (see fig.2, (72L or 72R)); and the plurality of available time delays are based on a sampling rate of a digital audio signal (see fig.2,(TD1,TD2....TDn).

Regarding claim 14, Nagata teaches that the apparatus for providing an interaural time delay in a digital 3D sound system comprises:

means for fixing (41 independently) a first interaural time delay (fig.2, 61) with respect to a first ear of a listener (see fig.2 (74R or 74L)); and

means for providing said -desired interaural time delay (see fig.2, 71) with respect to a second ear (see fig.2 (74R or 74L)) of said listener.

As to claims 7-10, these are method claims of claims 11-14, respectively. Thus note claims 11-14, respectively, for rejections.

Response to arguments

4. Applicant's arguments filed 12/19/2002 have been fully considered but they are not persuasive.

Applicant argued that Nagata does not teach 3D audio sound system and perceived positional sound (Remarks, page 7, 2nd paragraph). The examiner respectfully disagrees. The 3D audio sound system and perceived positional sound are met by the sound field produced by the combination of FL, FR, RL and RR signals in Nagata. See col. 8, lines 25-57.

Applicant further argued that Matsumoto fails to teach selecting or choice of delays, nor 3D audio sound system to create perceived positional sound (Remarks, page 7, 3rd-5th paragraphs). The examiner's response is that Matsumoto is not relied on to teach selecting or choice of delays which is met by Nagata (fig.2, 41, 48, 49, col. 4, line 42 – col. 5, line 44) in that the combination of the microcomputer, dials and command switch controls both delay unit 61 and delay unit 71 to provide a variety of delays in the respective output. Matsumoto is relied on to teach that the magnitude of the additional/second delay is a fraction of that of a first delay produced by a preceding/first delay module. Note the rejection of claim 1 with respect to Matsumoto for a detailed discussion. Regarding 3D audio sound system to create perceived positional sound, note the discussion regarding Nagata above.

Applicant argued the prior art references separately. It is the combination, rather than each reference alone, that meets the claimed limitations. Applicant's arguments are therefore not persuasive.

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner

can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600